

## REMARKS

Claims 1-44 were presented.

Claims 1-44 were deemed to require restriction under 35 U.S.C. §121 and 35 U.S.C. §372.

The claims were deemed to relate to a total of 6 groups:

Group I (claims 1-20) drawn to a method of preparing a catalyst material.

Group II (claims 21-31) drawn to a catalyst material.

Group II (claims 32-34) drawn to a chemical apparatus comprising a catalyst material.

Group IV (claims 35-39) drawn to a method of performing a chemical reaction and product prepared.

Group V (claim 40) drawn to a composition of matter.

Group VI (claims 41-44) drawn to a catalyst material.

The Restriction Requirement has taken the position that the claims do not relate to a single general inventive concept under PCT Rule 13.1, because under PCT Rule 13.2, they lack the same or corresponding technical features.

The Restriction Requirement cites that the claimed common technical feature is a catalyst material. The Restriction Requirement cites Ruettinger et al. U.S. Patent Application Publication no. 2002/0147103 (hereinafter "Reference D1") as anticipatory art.

### **Applicants Believe a Different Technical Feature is Present**

Applicants respectfully suggest that the technical feature of the claimed invention is the observed catalytic activity of the remaining structure lacking crystallinity associated with the substrate component that is present after the removal of crystalline material.

All of independent claims 1, 35, 40, 41 and 44 (and by operation of 35 U.S.C. §112, 4<sup>th</sup> paragraph, all other claims in the application, which explicitly depend, directly or indirectly, from one of claims 1, 35 and 41) recite as an element **the removal of at least some of the metallic crystalline particles.**

All of independent claims 1, 35, 40, 41 and 44 (and by operation of 35 U.S.C. §112, 4<sup>th</sup> paragraph, all other claims in the application, which explicitly depend, directly or indirectly,

from one of claims 1, 35 and 41) recite as an element **the presence of a metallic structure lacking crystallinity**.

Claim 1 additionally recites that the remaining structure lacking crystallinity associated with the substrate component exhibits catalytic activity.

All of claims 2-34 depend from claim 1 and include this limitation.

Claims 35 and 40 additionally recite that the removal of at least some of the metallic crystalline particles is further limited to those having a dimension of less than one nanometer.

Claims 36-39 depend from claim 35 and include this limitation.

Claim 40 additionally recites that the combination [of the substrate and the metal deposit comprising a portion having a structure lacking crystallinity] comprises a composition of matter having catalytic behavior greater than that of the substrate alone.

Claim 41 recites that the catalyst material is freed of metallic crystalline particles having substantially no catalytic activity, while retaining substantially all of the catalytic activity of the catalyst material.

Claims 42-43 depend from claim 41 and include this limitation.

Claim 44 recites "reduction of a metallic content of said improved catalyst material by said selective removal of at least some crystalline particles of said metallic substance, thereby reducing the amount of metal contained in said catalyst material while retaining substantially all of a catalytic activity exhibited by said catalyst material prior to said selective removal of said crystalline particles."

#### **Applicants cited Reference D1 in an IDS Submitted with the Application**

Applicants believe that Reference D1 is not an anticipatory reference that would cause any claim as presently pending to be anticipated or rendered obvious under 35 U.S.C. §102 or 35 U.S.C. §103.

**1. Reference D1 does not explicitly teach and does not even suggest the presence of a metallic phase having a structure lacking crystallinity.**

In fact, Reference D1 often uses the term "calcined" in describing the preparation steps of the various catalytic compositions described. As anyone familiar with the material science arts

would recognize, the term "calcined" is used to denote heating to perform decomposition reactions or phase transition reactions. In the process, it is common that one generates crystallites of larger size than may be present in a "green" (or as deposited) material. An electronic search of the text of reference D1 as available on the web site of the United States Patent and Trademark Office returns numerous hits for the word "calcined," beginning at paragraph [0055].

If anything, a fair reading of the preparative methods for the catalysts described by **Reference D1 actually teaches away** from the disclosure and claims of the present invention.

**2. Reference D1 does not explicitly teach and does not even suggest the removal of metallic particles from any material that Reference D1 describes.**

It appears from a search of the text of Reference D1, that there is no discussion in any sense of removing components of the catalytic material that Reference D1 describes.

Based on an electronic search of the text of Reference D1 as available on the web site of the United States Patent and Trademark Office, the only use of the word "dissolved" occurs at paragraph [0103] in the sentence "The calcined 1/8-inch particles were then impregnated (i.e., impregnated at 55% incipient wetness to obtain about 15 wt.% CeO.sub.2) in an aqueous solution of cerium nitrate (i.e., Ce(NO<sub>3</sub>)<sub>3</sub>; 33.44 g Ce(NO<sub>3</sub>)<sub>3</sub> **dissolved** in 55 g water, per 100 g alumina)." (emphasis added)

Based on an electronic search of the text of Reference D1 as available on the web site of the United States Patent and Trademark Office, the only use of the word "removed" occurs at paragraph [0100] in the sentence fragment "Residual carbon monoxide in the process is then **removed** by selective carbon monoxide oxidation (with minimal hydrogen consumption) to carbon dioxide in the preferential oxidation reactor (4) according to the reaction:" (emphasis added)

Based on an electronic search of the text of Reference D1 as available on the web site of the United States Patent and Trademark Office, a variant of the word "eliminate" appears once, at paragraph [0003], in the sentence "Fuel cells directly convert chemical energy into electricity thereby **eliminating** the mechanical process steps that limit thermodynamic efficiency, and have been proposed as a power source for many applications." (emphasis added)

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Filed: May 6, 2005  
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Based on an electronic search of the text of Reference D1 as available on the web site of the United States Patent and Trademark Office, the word "etch" or its variants does not appear in the text of Reference D1.

Applicants do not understand how the Restriction Requirement can suggest that Reference D1 anticipates all of the 44 inventions as presently claimed in claims 1-44.

Based on the foregoing, Applicants respectfully submit that Reference D1 cannot anticipate any pending claim, and cannot render any pending claim obvious, because Reference D1 fails to teach or suggest at least two different limitations of each pending claim.

Applicants respectfully submit that every pending claim is patentable over Reference D1.

#### **Applicants Respectfully Traverse the Restriction Requirement**

Applicants respectfully traverse the Restriction Requirement based on the technical feature of the claimed invention, namely the observed catalytic activity of the remaining structure lacking crystallinity associated with the substrate component that is present after the removal of crystalline material.

Applicants respectfully submit that every claim as presently pending includes this technical feature, either explicitly or by incorporation by reference as required by operation of 35 U.S.C. §112, 4<sup>th</sup> paragraph. Accordingly Applicants respectfully request that the Restriction Requirement be withdrawn and that all presently pending claims be examined.

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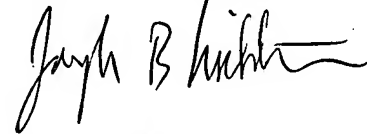
### CONCLUSION

Applicants have presented reasons for traversing the Restriction Requirement, and have argued that the Restriction Requirement should be withdrawn. Applicants submit that claims 1-44 are now in proper condition for allowance, and request the issuance of a Notice of Allowance at the Examiner's earliest convenience. In the event that the Restriction Requirement is not withdrawn, Applicants elect to prosecute the claims in Group I.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is requested to call Applicants' attorney at the phone number noted below.

Respectfully submitted,  
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